

Remarks

The various parts of the Office Action (and other matters, if any) are discussed below under appropriate headings.

Interview with Examiner

The undersigned would like to thank Examiner Steven Holton for the courtesies extended during the personal interview on December 7, 2011. During the interview, the pending claims and outstanding rejections were discussed. The following response summarizes the substance of the interview with Examiner Holton.

The pending claims have been amended to further clarify the claimed invention. For example, the pending claims have been amended to recite display systems and methods including an input signal having separately encoded image data and display control data. Aspects of the claimed invention provide for encoding and decoding display control data separate from the image data, but together in the same input signal with the image data. Components of the claimed display device are configured to process the separately encoded display control data included in the input signal and use the separately encoded display control data to process the image data and synchronously control the passive display and illumination source based on the display control data.

Various conventional display systems, like the system described in Sakashita, include different image enhancement algorithms that operate based on the received image data. The claimed invention provides the option of bypassing the variable image processing and enhancement algorithms resident on various displays, thereby providing more consistent image display and image enhancement regardless of the image enhancement algorithms resident on a particular display. The claimed invention allows for the provision of a “dumb display” that does not make use of an image enhancement algorithm, but displays the image based on the received display control data. Also, the creator of a sequence of video images can set the display parameters before delivery of the image signal to a display device.

The rejections of the pending claims are based in large part on Sakashita, and, in particular, Fig. 8 of Sakashita and the corresponding description. It is respectfully submitted that Sakashita does not disclose the claimed provision of operating with an input image signal having separately encoded image data and display control data,

along with the claimed provisions of encoding and decoding display control data separate from the image data, but together in the same input signal with the image data.

Rather, as shown in FIGS. 8 and 9 and the associated description, Sakashita deals with a conventional display system having its own resident image enhancement algorithm (Sakashita's DSP 57)¹ in which the image data is processed to enhance the displayed image. For example, at column 11, lines 17-32, Sakashita discusses its image processing algorithm that, among other things, calculates luminance distribution, maximum value, minimum value, average value and histogram.

Claim Rejections - 35 USC § 102 and § 103

Claim 16, as amended, recites a display system for passive displays, wherein the display system is configured to receive an input signal including separately encoded display control data and image data. The display system includes a control configured to process the separately encoded display control data included in the input signal and to control the optical characteristics of incident light to a passive display and to process the image data to control optical characteristics of the displayed image based on the display control data.

The invention, as recited in claim 16, includes a display system configured to receive an input signal that includes separately encoded image data and display control data. The display system includes a control configured to process the separately encoded display control data included in the input signal and to control the optical characteristics of incident light to the passive display and to process the image data to control optical characteristics of the displayed image based on the display control data.

As noted above, the claimed control processes the separately encoded display control data included in the input signal, controls the optical characteristics of incident light to the passive display, and processes the image data to control optical characteristics of the displayed image based on the display control data.

Sakashita fails to disclose or suggest the claimed display system, including a control configured to process separately encoded display control data within the input signal and to control the optical characteristics of incident light to the passive display and to process the image data to control optical characteristics of the displayed image

¹ Sakashita, col. 10, line 61.

based on the display control data. Rather, Sakashita makes use of an image enhancement algorithm based on the received image data.

For at least these reasons, it is respectfully submitted that the rejection of claim 16 should be withdrawn. Dependent claim 49 should be in condition for allowance for at least the reason that it depends from claim 16.

Claim 19, as amended, recites an image processing system for preparing control data for use in displaying a sequence of images that includes a buffer memory to receive the image data representative of the sequence of images and an analyzer configured to analyze input image data of a plurality of images of the sequence of images. The analyzer is configured to create control data, the control data including illumination control data for use in controlling optical characteristics of the incident light to a light modulating display and to create image control data for controlling processing of the image data in the passive display to control characteristics of displayed images, and to separately encode the display control data in an input signal together with the input image data in a combined output signal of the image processing system to be used as the input to a passive display with an illuminating light source.

Sakashita fails to disclose or suggest creating image control data for controlling processing of the image data to control characteristics of displayed images, and separately encoding the display control data in an input signal together with the input image data in a combined output signal of the image processing system to be used as the input to a passive display with an illuminating light source.

For at least these reasons, the rejection of claim 19 and dependent claims 20-22 should be withdrawn. Dependent claims 50-51 should be in condition for allowance for at least the reason that they depend from claim 19.

Claim 24, as amended, recites a display system that includes a passive display, a source of illumination to illuminate the passive display and cooperative with the passive display to present images, and a storage medium providing an input signal that includes separately encoded display control data and image data, the display control data including illumination control data to control optical characteristics of light from the source of illumination and image control data to control characteristics of displayed images and wherein the display control data is based on an evaluation of illumination of an input scene represented by an image for display, the evaluation occurring prior to storage of the display control data on the storage medium.

Sakashita has not been found to disclose or suggest the claimed system including a storage medium providing an input signal that includes separately encoded display control data and image data, the display control data including illumination control data to control optical characteristics of light from the source of illumination and image control data to control characteristics of displayed images and wherein the display control data is based on an evaluation of illumination of an input scene represented by an image for display, the evaluation occurring prior to storage of the display control data on the storage medium.

For at least these reasons, the rejection of claim 24 and dependent claim 25 should be withdrawn. Dependent claims 52-54 should be in condition for allowance for at least the reason that they depend from claim 24.

Claim 36, as amended, recites an image processing system for preparing a signal that includes image data and control data for a passive display with an illuminating light source. The claimed image processing system includes an image obtaining device to provide image data representing input scenes, an image processing apparatus configured to evaluate image data of input scenes, and to provide separately encoded display control data to be included with the image data in the signal, the separately encoded display control data including illumination control data to control the optical characteristics of an illumination source for a passive display, and image processing control data to control processing of an image displayed by the illuminated passive display.

Sakashita fails to disclose the claimed image processing system for preparing a signal that includes image data and control data for a passive display having an illuminating light source, including an apparatus configured to evaluate image data of input scenes and to provide separately encoded display control data to be included with the image data in the signal, where the separately encoded display control data includes illumination control data and image processing control data.

For at least these reasons, the rejection of claim 36 should be withdrawn. Dependent claims 55-56 should be in condition for allowance for at least the reason that they depend from claim 36.

Claim 37, as amended, recites a method of editing and encoding images represented by image data captured by an image recording device, where the captured

images are composed of an assemblage of pixels for display or projection using a passive display to which input light is incident to provide images. The method includes determining display control data to be used in the display to obtain a desired appearance of a displayed image, the display control data including control data for a characteristic of the input light and control data for the number of shades of gray available in the displayed image, including the determined display control data with the input signal, the display control data corresponding to the adjusted light characteristic and number of shades of gray, and storing both the display control data and the image data for use subsequently to adjust the characteristic of input light and number of shades of gray available in the image to obtain a desired appearance of the image provided by a passive display.

Sakashita fails to disclose the claimed method of editing and encoding images, including determining display control data to be used in the display to obtain a desired appearance of a displayed image, the display control data including control data for a characteristic of the input light and control data for the number of shades of gray available in the displayed image, and including the determined display control data with the image data, the display control data corresponding to the adjusted light characteristic and number of shades of gray, and storing both the display control data and the image data for use subsequently to adjust the characteristic of input light and number of shades of gray available in the image to obtain a desired appearance of the image provided by a passive display.

In addition, neither Fergason '422 nor Ohyama cures the above-noted deficiency of Sakashita with respect to including the determined display control data with the input signal, the display control data corresponding to the adjusted light characteristic and number of shades of gray, and storing both the display control data and the image data.

For at least these reasons, the rejection of claim 37 and dependent claims 41-43 should be withdrawn.

Claim 57, as amended, recites a display system that includes display circuitry operatively coupled to a passive display and an illumination source and configured to receive an input signal wherein the input signal includes separately encoded image data and display control data. The display circuitry is configured to process the separately encoded display control data included in the input signal, and to process the image data included in the input signal to the passive display and control the level of illumination source based on the separately encoded display control data.

Sakashita fails to disclose the claimed display system that includes display circuitry operatively coupled to a passive display and an illumination source and configured to receive an input signal wherein the input signal includes separately encoded image data and display control data. The display circuitry is configured to process the separately encoded display control data included in the input signal, and to process the image data included in the input signal to the passive display and control the level of illumination source based on the separately encoded display control data.

Therefore, it is respectfully submitted that the rejection of claim 57 and dependent claims 58-64 should be withdrawn.

Claim 65, as amended, recites a display system that includes display circuitry operatively coupled to a passive display and an illumination source and configured to receive and input video signal indicative of an image to be displayed, wherein the input video signal includes separately encoded image data and display control data. The display circuitry includes decoding circuitry configured to decode and process the separately encoded display control data within the input video signal and control the passive display and the illumination source based on the separately encoded display control data.

Sakashita fails to disclose the claimed display system, including display circuitry operatively coupled to a passive display and an illumination source and configured to receive and input video signal indicative of an image to be displayed, wherein the input video signal includes separately encoded image data and display control data. Sakashita also fails to disclose that the display circuitry includes decoding circuitry configured to decode and process the separately encoded display control data within the input video signal and control the passive display and the illumination source based on the separately encoded display control data.

For at least these reasons, the rejection of claim 65 should be withdrawn.

The dependent claims, while reciting further features, are not being independently discussed in as much as they are allowable for at least the same reasons as the independent claims from which they depend. This absence of any comment regarding the dependent claims, however, should not be construed as an acquiescence to the contentions made in the Office Action.

Telephone Interview

If it is determined that the application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

In view of the foregoing, request is made for timely issuance of a notice of allowance.

Respectfully submitted,

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